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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/709,318	04/28/2004	Siddhartha Panda	FIS920040032US1	3317
29371	7590	02/01/2006	EXAMINER	
CANTOR COLBURN LLP - IBM FISHKILL 55 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002			WOOLWINE, SAMUEL C	
			ART UNIT	PAPER NUMBER
			1637	

DATE MAILED: 02/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/709,318		PANDA ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Samuel Woolwine		1637	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 January 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 1-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### ***Status***

Claims 1-11 are withdrawn from further consideration. Claims 12-16 have been amended in response to the previous Office Action of 12/13/2005.

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 12-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Conia et al (US Pat 5,972,667).

3. Regarding claim 12, Conia teaches: *A temperature cycling apparatus, comprising: a processing chamber; (see, e.g. figure 1 and column 6 lines 35-41) an infrared (IR) heating source, (see column 3, lines 20-30) said infrared heating source configured to generate energy at a first infrared wavelength so as to generate a first desired temperature for a first duration and produce a first desired reaction within a sample placed in said processing chamber; (see column 5 line 67 through column 6 line 10, and see claim 10) and said infrared (IR) heating source is further configured to generate energy at a second infrared wavelength so as to generate a second desired temperature for a second duration and produce a second desired reaction within the sample (see column 5 line 67 through column 6 line 10, and see claim 10). With*

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particular regard as to selecting an infrared wavelength so as to generate a desired temperature and generating multiple desired temperatures, note Conia teaches: "The systems and methods described in the present invention accomplish laser-generated incremental temperature elevations...which is a function of the laser beam intensity, wavelength, profile and distributed photon intensity, which can be controlled...to favor one, several or all phases of the polymerase chain reaction" (column 5, line 67 through column 6, line 10, emphasis added). Conia also teaches several lasers emitting different wavelengths in the infrared range (column 3, lines 50-60).

4. Regarding claim 13, Conia teaches: *The temperature cycling apparatus of claim 12, wherein said infrared (IR) heating source further is configured to generate energy at a third infrared wavelength so as to generate a third desired temperature for a third duration and produce a third desired reaction within the sample.* See column 3, lines 20-30, and see column 5, line 67 through column 6, line 10, and see claim 10. See also figure 1 and column 6, lines 35-41. With particular regard as to selecting an infrared wavelength so as to generate a desired temperature and generating multiple desired temperatures, note Conia teaches: "The systems and methods described in the present invention accomplish laser-generated incremental temperature elevations...which is a function of the laser beam intensity, wavelength, profile and distributed photon intensity, which can be controlled...to favor one, several or all phases of the polymerase chain reaction" (column 5, line 67 through column 6, line 10, emphasis added).

5. Regarding claim 14, Conia teaches: *The temperature cycling apparatus of claim 13, wherein: said first desired temperature corresponds to a denaturing step for a*

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*polymerase chain reaction (PCR) process; said second desired temperature corresponds to an annealing step for said PCR process; and said third desired temperature corresponds to an extending step for said PCR process. See column 3, lines 20-30, and see column 5, line 67 through column 6, line 10, and see claim 10. See also figure 1 and column 6, lines 35-41. With particular regard as to selecting an infrared wavelength so as to generate a desired temperature and generating multiple desired temperatures, note Conia teaches: "The systems and methods described in the present invention accomplish laser-generated incremental temperature elevations...which is a function of the laser beam intensity, wavelength, profile and distributed photon intensity, which can be controlled...to favor one, several or all phases of the polymerase chain reaction" (column 5, line 67 through column 6, line 10, emphasis added).*

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Conia et al (US Pat 5,972,667) in view of Oh et al (Pub No US 2003/0092172 A1).

8. Claims 15 and 16 depend from claims 12-14. Regarding claim 12, Conia teaches: *A temperature cycling apparatus, comprising: a processing chamber; (see,*

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e.g. figure 1 and column 6 lines 35-41) *an infrared (IR) heating source*, (see column 3, lines 20-30) *said infrared heating source configured to generate energy a first infrared wavelength so as to generate a first desired temperature for a first duration and produce a first desired reaction within a sample placed in said processing chamber*; (see column 5 line 67 through column 6 line 10, and see claim 10) *and said infrared (IR) heating source is further configured to generate energy at a second infrared wavelength so as to generate a second desired temperature for a second duration and produce a second desired reaction within the sample* (see column 5 line 67 through column 6 line 10, and see claim 10).

9. Conia also teaches claim 13: *The temperature cycling apparatus of claim 12, wherein said infrared (IR) heating source further is configured to generate energy at a third infrared wavelength so as to generate a third desired temperature for a third duration and produce a third desired reaction within the sample*. See column 3, lines 20-30, and see column 5, line 67 through column 6, line 10, and see claim 10.

10. Conia further teaches claim 14: *The temperature cycling apparatus of claim 13, wherein: said first desired temperature corresponds to a denaturing step for a polymerase chain reaction (PCR) process; said second desired temperature corresponds to an annealing step for said PCR process; and said third desired temperature corresponds to an extending step for said PCR process*. See column 3, lines 20-30, and see column 5, line 67 through column 6, line 10, and see claim 10. See also figure 1 and column 6, lines 35-41. With particular regard as to selecting an infrared wavelength so as to generate a desired temperature and generating multiple



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desired temperatures, note Conia teaches: "The systems and methods described in the present invention accomplish laser-generated incremental temperature elevations...which is a function of the laser beam intensity, wavelength, profile and distributed photon intensity, which can be controlled...to favor one, several or all phases of the polymerase chain reaction" (column 5, line 67 through column 6, line 10, emphasis added). Conia also teaches several lasers emitting different wavelengths in the infrared range (column 3, lines 50-60).

With regard to claims 15 and 16, Conia does not teach an apparatus further comprising a first, second and third chamber, each said chamber being of a different temperature and having a different infrared wavelength. Oh teaches an apparatus comprising a first, second and third chambers, each maintained at separate temperatures (see for example figures 9-11 and page 2, paragraph [0030]). Regarding claim 16, Oh teaches a conveyer comprising a system of channels and valves connecting the chambers and pneumatic air pressure providing the driving force to transport the sample from one chamber to the next (see page 2, paragraph [0034]). Oh teaches the use of infrared energy as a means of providing an appropriate temperature in the reaction chamber (see page 3, paragraph [0046] and claim 17). Oh does not teach the use of infrared energy of different wavelengths. It would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention of the instant application was made to combine the teachings of Conia for using different infrared wavelengths to control the temperature of the sample in the reaction chamber with the use of separate sample chambers connected by the conveyer system as taught by Oh.

Conia clearly teaches achieving a target temperature by controlling the wavelength of the infrared energy source: “The systems and methods described in the present invention accomplish laser-generated incremental temperature elevations...which is a function of the laser beam intensity, wavelength, profile and distributed photon intensity, which can be controlled...to favor one, several or all phases of the polymerase chain reaction” (column 5, line 67 through column 6, line 10, emphasis added). Conia also clearly teaches the use of different lasers producing different wavelengths of infrared energy (see column 3, lines 45-59) and provides motivation to use lasers (and thus defined wavelengths) for use in microscopic devices: “A laser beam focused by the objective lens of a microscope can be used to illuminate or to transfer energy to a very small part of a microscopic target specimen” (column 4, lines 48-51). This motivation to use lasers (and thus defined wavelengths) harmonizes with the express teaching of Oh to use his invention in a microchip or “lab on a chip” format for PCR (page 5, paragraph [0071]). Oh provides motivation to use discrete chambers maintained at different temperatures for the different stages of PCR because in his system, “there is no need for any circuits for cooling or cooling system” (page 5, paragraph [0068]).

### ***Response to arguments***

Applicant's amendments to the claims and arguments regarding the rejections of the previous Office Action of 12/13/2005 and reiterated above have been carefully considered, but are not persuasive. In particular, Applicant argues that the amendments to claims 12 and 13 distinguish over the prior art because the wavelengths



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of the apparatus are selected so as to heat the “sample” without heating the “medium containing the sample”.

First and foremost, the new limitations introduced by the amendments are directed to an intended use. Applicants claims do not recite any specific wavelengths, and Conia teaches that his invention “accomplish laser-generated incremental temperature elevations...which is a function of the laser beam intensity, wavelength, profile and distributed photon intensity, which can be controlled” (Conia, column 5, line 67 through column 6, line 10). Additionally, Conia states “The present invention teaches the use of controlled preferably infrared energy extending from 750 nm to millimeter waves to produce molecular effects in biological specimens and/or biological systems” (column 3 lines 20-24). Thus, because Conia teaches that the wavelength of the IR source can be controlled over a range of wavelengths, the apparatus taught by Conia could be used according to the claims of the instant application.

It is clearly stated in MPEP 2114:

**APPARATUS CLAIMS MUST BE STRUCTURALLY DISTINGUISHABLE FROM THE PRIOR ART**

>While features of an apparatus may be recited either structurally or functionally, claims< directed to >an< apparatus must be distinguished from the prior art in terms of structure rather than function. >In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997) (The absence of a disclosure in a prior art reference relating to function did not defeat the Board’s finding of anticipation of claimed apparatus because the limitations at issue were found to be inherent in the prior art reference); see also In re Swinehart, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971);< In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). “[A]pparatus claims cover what a device is, not what a device does.” Hewlett-Packard Co. v. Bausch & Lomb Inc., 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990) (emphasis in original).

**MANNER OF OPERATING THE DEVICE DOES NOT DIFFERENTIATE APPARATUS CLAIM FROM THE PRIOR ART**

A claim containing a “recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus” if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987) (The preamble of claim 1 recited that the apparatus was “for mixing flowing developer material” and the body of the claim recited “means for mixing ..., said mixing means being stationary and

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completely submerged in the developer material". The claim was rejected over a reference which taught all the structural limitations of the claim for the intended use of mixing flowing developer. However, the mixer was only partially submerged in the developer material. The Board held that the amount of submersion is immaterial to the structure of the mixer and thus the claim was properly rejected.).

Since there is no *structural* distinction between the apparatus of Applicant's claims but only a distinction as to intended use, the apparatus taught by Conia meets the limitations of the claims. Therefore the rejections are maintained and this action is made FINAL.

### ***Conclusion***

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel Woolwine whose telephone number is (571) 272-1144. The examiner can normally be reached on Mon-Fri 9:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on (571) 272-0782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
JEFFREY FREDMAN  
PRIMARY EXAMINER

1/31/06